Chemical Occurrences - June, 1998

Class 1:

None

Class 2:

LANL - A test tube failure during sublimation process resulted in violent vaporization of aluminum chloride

ORNL - An improperly disposed broken bottle of Lithium Oxide is found in trash

LANL - Data turnaround is exceeded for employee's personal Beryllium Air Sample

Other Occurrences of Note:

Propane tank falls from attic ** High Explosives shipped ** Phosphoric Acid spill

Note: Occurrences included in this report are date-sorted according to the "Notification Report" date, this promotes timely alerting of occurrences.

Highlights of ORPS Occurences for June, 1998

- **15** Total reports representing potential chemical safety concerns. See Attachment 1.
- **1** Total reports characterized at **"Emergency"**
- **3** Total reports characterized as **"Unusual"**
- **11** Total reports characterized as **"Off-Normal"**

- **6** Total reports listing **DP** as Cognizant Secretarial Office
- **5** Total reports listing **EM** Cognizant Secretarial Office
- **3** Total reports listing **ER** as Cognizant Secretarial Office
- **1** Total reports listing **EE** as Cognizant Secretarial Office

- **0** Class 1
- **3** Class 2
- **5** Class 3
- **7** Class 4

Definitions of Classes

SUMMARY OF CLASS 2 OCCURRENCES:

Failure of test tube during sublimation process results in violent vaporization of aluminum chloride. ALO-LA-LANL-RADIOCHEM-1998-0005: (DP):

At approximately 1020 hours on June 17, 1998, a test tube containing 3 - 6 grams of aluminum trichloride cracked while being heated in a test tube furnace in Room 606 of the Radiochemistry Building (TA-48-1). As a result of the failure of the test tube, the aluminum trichloride came in contact with the heating coils of the furnace and the aluminum trichloride vaporized violently, releasing a vapor cloud. The test tube was shattered and small glass fragments were blown into the laboratory. The two Nuclear and Radiation (CST-11) employees in the room immediately evacuated to the corridor and were not exposed to the vapor cloud. One employee had a small piece of glass on her face, but it did not penetrate the skin. The chemical of concern in the vapor cloud would have been hydrogen chloride which would have caused irritation of the eyes and mucous membranes It was determined that both technicians had not been exposed, but both were sent to Occupational Medicine (ESH-2) for evaluation.and were released to return to work.

Broken Chemical Bottle Containing Lithium Oxide found in trash: ORNL-X10BOPLANT-1998-0004. (ER):

On June 17, 1998, during baler operations at the Y-12 Landfill, three personnel began to experience respiratory and skin irritation. Operations at the Baler Facility were immediately terminated and, as a precautionary measure, the three personnel were sent to the Y-12 Medical Center, where they were examined and released. Further investigation of the incident identified a broken chemical bottle (less than 4 ounces) that was marked as containing Lithium Oxide powder. Upon discovery of the broken chemical bottle, IH personnel evaluated the hazard and determined that no Permissible Exposure Limit (PEL) or Threshold Limit Value (TLV) for this material had been exceeded. An investigation was then initiated by ORNL personnel to identify potential sources of the chemical.

Employee's Personal Beryllium Air Sample exceeds OSHA TWA PEL Sample Data Turnaround Time. ALO-LA-LANL-SHOPSFAC-1998-0002. (DP):

On April 16, 1998, as part of normal operations in TA-3-39, Room 16, three technicians were machining beryllium. Both personal and area air samples were taken as part of an ongoing effort to evaluate the effectiveness of the shop engineering controls, and to minimize beryllium personnel exposure. Air sample data acquired during the week of April 13, 1998, measured one employee's (E1) personal air sample at 1.99 micrograms per meter cubed, with an approximate 95% confidence level, plus or minus 0.22. The OSHA Permissible Exposure Limit (PEL) for beryllium is 2.0 micrograms per meter cubed. The issue of concern is that the Fabrication Team Leader and the machinists were not informed for over six weeks, what concentrations of beryllium they were exposed to during their daily machining operations. The current structure for the air sample data acquisition and dissemination process does not allow line managers or workers to incorporate compensatory measures in an efficient manner, should beryllium exposures reach significantly close to the PEL. The occurrence is being evaluated further. With a 95% confidence level, and a

document reading of 1.99 micrograms per meter cubed, and the delay in reporting, this occurrence warrants attention as a Class 2 occurrence.

OTHER OCCURRENCES OF NOTE:

High Explosives Material Shipped Intra Laboratory in Non-Compliance with DOT regulations and Placed in a Non-explosive DX Area. ALO-LA-LANL-FIRNGHELAB-1998-0004 (DP)

On June 9, 1998, at Technical Area (TA) 22, Building 5, Detonation Science & Technology (DX) personnel discovered five high-explosive disks in a non- high explosive area. The explosives were immediately placed in a high-explosives storage area. There was no impact to the safety and health of personnel, the environment, or the program. The explosive materials were left inadvertently in the the shipping containers and forwarded intra-lab for return to the vendor. Diligence in unpacking and inspecting containers containing potentially dangerous shipments, is necessary.

Propane Tank Fall from Attic Area into Unoccupied Office Space ORO--ORAU-ORISE-1998-0004: (ER):

On 05/11/98, while staging materials for work to be completed after hours, a twenty pound B-propane tank that had been placed on a catwalk was moved to an unstable area by another employee. The unsecured tank fell through the ceiling into an office area. The office area was vacant and no employee was assigned to that office at the time of the incident. The cause was due to the subcontractor not securing the tank and working overhead during normal hours when instructed not to. Though no injuries occured, if employees had been present in the offices below, then there would have been the possibility of injury. As a result of this occurrence, contractor personnel were instructed not to work in the attic before 5:30 p.m., and any tanks used in attic construction must have appropriate safety lines attached.

Approximately 2 Gallons of Phosphoric Acid Discovered In The Bermed Area on Dock 8, Building 371/Operational Emergency Was Declared RFO--KHLL-LIQWASTE-1998-0002: (EM):

On June 9, 1998, at 1100 hours a dark green substance was discovered in the area of Dock 8. Building 371 Environmental Operations and Radiological Operations personnel were contacted to investigate the substance. The substance was determined to be 2 gallons of phosphoric acid. The phosphoric acid apparently came from the drain pipe for Tank D843. Radiological surveys taken showed levels up to 3,000 direct counts per minute of alpha contamination. Incident Command was immediately established by the Building 371 Shift Manager.Emergency operations included securing the area, sheltering of employees and taking samples of the liquid for analysis. All contamination was contained at the scene and there was no indication of any airborne contamination.

Additional information regarding these occurrences and others will be discussed in an upcoming Quarterly Review; some are currently summarized on this website. As occurrence reports are finalized, lessons learned will be communicated.

This report approved by

Sanji Kanth

DOE Office of Worker Health and Safety

Note:

A version of this report is also available via e-mail either as a WordPerfect or a text file, and hardcopies will also be provided upon request.

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